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Report # 27-47

April 22, 1947

ACUTE TOXICITY TESTS WITH VARIOUS ISOCYANATES

Acute toxicity tests were carried out on the following isocyanates

I
II
III
IV

2,4 Toluene Di-isocyanate Bisulfite Adduct
Toluene 2,4 Di-isocyanate 98% pure (distilled)
Octadecyl Isocyanate
Toluene 2,4 Di-isocyanate (75% pure) (technical)

The results of our feeding tests with rats are summarized below:

	<u>No. Rats</u>	<u>Dose</u>	<u>No. Treatments</u>	<u>Deaths</u>
I	1	1 gram/kilo	1	0
	1	3.5 gram/kilo	1	0
	1	5.0 gram/kilo	1	1

All three rats appeared most uncomfortable within 20 minutes after treatment. Prostration was evident and the breathing was labored. The rat receiving the highest dose became weak in the hind legs and quite cyanotic. It died about four hours after treatment; the chief finding at autopsy being an intense cyanosis of all the organs. The other two rats survived. The one receiving the 1 gram per kilo dose gained weight satisfactorily during the ten days after treatment. The one receiving the 3.5 grams per kilo dose lost weight after treatment and took a week to regain the weight lost.

	<u>No. Rats</u>	<u>Dose</u>	<u>No. Treatments</u>	<u>Deaths</u>
II	1	1 gram/kilo	1	0
	1	5 gram/kilo	1	0
	1	7.5 gram/kilo	1	1 (Died during night)

The two rats in the lower doses lost considerable weight as a result of treatment. The rat receiving the 1 gram per kilo dose did not regain the weight lost until 7 days after treatment and the rat receiving 5 grams per kilo had not regained the weight lost by the 12th day after treatment, at which point the experiment was terminated. The rat that died showed some pulmonary edema and had hemorrhages in the stomach and duodenum.

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	<u>No. Rats</u>	<u>Dose</u>	<u>No. Treatments</u>	<u>Deaths</u>	
	1	1 gram/kilo	1	0	
<u>III</u>	1	5 gram/kilo	1	0	
	1	7.5 gram/kilo	1	0	JHF

As with II and I, these rats appeared uncomfortable within a half hour after treatment. The rats on the lower dosage gained weight slowly after treatment and the one on the high dose made a fairly good gain in weight.

	<u>No. Rats</u>	<u>Dose</u>	<u>No. Treatments</u>	<u>Deaths</u>
	1	1 gram/kilo	1	0
<u>IV</u>	1	5 gram/kilo	1	0
	1	7.5 gram/kilo	1	0

Treatment produced discomfort in the rats within half an hour. All these survived. The rat receiving 1 gram per kilo lost weight slightly after treatment and remained stationary in weight during the next 12 days. The rats receiving the higher doses lost considerable weight as a result of treatment and did not regain the weight lost during the 12 days following treatment.

On the basis of our tests, these compounds would be listed in the following order according to decreasing toxicity, although the difference is not striking: I, II, IV and III. Rats appear able to survive a surprisingly high dose of these isocyanates.

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